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the fact that my plate was made with an old silver surface on the mirror. The stars are estimated to be of about the 17th magnitude on both of Mr. Ritchey's plates. On mine, No. 1 is about a magnitude fainter, and No. 2 is quite invisible. On a plate exposed 2<sup>h</sup>30<sup>m</sup> with the Hooker telescope 1921 June 30, No. 1 is about half a magnitude fainter than on the 1910 plates, and No. 2 is still invisible. No evidence was found that any change had taken place in the nebula itself during the 11-year interval.

JOHN C. DUNCAN.

July 12, 1921.

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#### THE GREAT SUN-SPOT OF MAY, 1921\*

(Abstract)

This spot, which was associated with brilliant auroras and intense terrestrial magnetic disturbances, showed some remarkable peculiarities. Chief among these were the mixed magnetic polarities of the two larger members of the group. The bearing of these phenomena on the nature of sun-spots is briefly discussed in the paper.

GEORGE E. HALE AND S. B. NICHOLSON.

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#### ON THE ABSENCE OF SELECTIVE ABSORPTION IN THE ATMOSPHERE OF VENUS\*

(Abstract)

The spectrum of *Venus*, with a scale of 3 Å per mm, has been compared with the solar spectrum from  $\lambda 3900$  to  $\lambda 6900$ . No lines due to the atmosphere of *Venus* were observed. These observations were made when the relative velocity of the Earth and *Venus* was such that lines originating in the atmosphere of *Venus* should have been completely separated from those due to the Earth's atmosphere, the displacement being about 0.25Å. Solar lines of Rowland intensity 00 and 000 are present in the spectrograms, but there is no trace of water vapor lines or of oxygen lines in the  $\alpha$  and B groups,  $\lambda 6300$  and  $\lambda 6800$ , originating in the atmosphere of *Venus*. The measured wave lengths of the water vapor and oxygen lines present are the same as for the terrestrial atmospheric lines. As far as our observations go, the solar lines are unmodified and no lines due to water vapor or oxygen are produced by the double passage

of sunlight thru the spectroscopically accessible depths of the atmosphere of *Venus*.

CHARLES E. ST. JOHN and SETH B. NICHOLSON.  
10 minutes. Lantern.

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INTERFEROMETER OBSERVATIONS OF DOUBLE STARS\*  
(Abstract)

Further observations have been made at Mount Wilson by the writer with the rotating type of stellar interferometer devised by Anderson and applied by him with great success to the determination of the orbit of the close double star *Capella*.

The new measures of *Capella* indicate that the orbital elements derived by Anderson will require only small corrections.

The duplicity of the known double star  $\kappa$  *Ursae Majoris* (A 1585) was independently detected by Anderson and the writer with the interferometer on the night of March 1, 1921. Aitken's measures in 1907, 1909 and 1919 and the recent results with the interferometer are as follows:

Date	Angle	Distance
1907.83	283°.2	0".21
1909.33	281°.4	0".25
1919.29	264°.9	0".15
1921 Mar. 1	251°.9	0".0836
" 2	252°.5	0".0833
" 31	251°.3	0".0801
Apr. 1	250°.7	0".0796
" 30	250°.2	0".0772

About 70 stars have been examined and found to show no decided changes of visibility of the fringes with varying position angle, with slit separations up to 80 inches.

PAUL W. MERRILL.

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SUMMARY OF MOUNT WILSON MAGNETIC OBSERVATIONS OF SUN-SPOTS FOR MAY AND JUNE, 1921.

The mean number of groups observed daily during May, namely 1.4, was lower than for any month since 1914. The interesting group, No. 1842, with which the magnetic storms and auroras of May 13th and 14th were associated, made the spotted area for the month relatively larger, however. June was a more active month with an average of 3.0 groups each day. There was one spotless day in May and none in June.